

Appl. No. 09/725,786  
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**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS:**

1. (currently amended) An apparatus for generating a group of character sets that are both never repeating within certain period of time and difficult to guess, said apparatus comprising:
  - a character-generating server, said character-generating server existing either as a single task in an embedded environment, a single process daemon in a UNIX environment, a physical circuit or a microchip, said character-generating server comprising a character generator, a random generator connecting to said character generator, a temporal reference storage connecting to said character generator, said temporal reference storage storing the most current time information, and a key-pool group connecting to said character generator, said key-pool group including any or all of a first [[kind]] type of key with a first [[kind]] type of pool, a second [[kind]] type of key with a second [[kind]] type of pool, and a third [[kind]] type of key with a third [[kind]] type of pool, said character generator capable of generating a character set, said character set having thirty-two different characters, based on a geometric progression of  $x(n)=p(x(n-1) + i)$ , said geometric progression manifesting itself as a chaotic progression of orbits around an origin, said orbit being defined as a unique and continuous path

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around said origin and never crossing in on itself or any other orbit, said  $x(n)$  and said  $x(n-1)$  representing different character set, said  $n$  representing the number of said character set generated by said character-generating server, said  $i$  representing a temporal difference between the time when two sequential orbits cross an arbitrary infinite vector from said origin, said  $p$  representing a period, said period being the temporal difference between character sets along any of said orbit, said geometric progression defining thirty-two periods on any of said orbit, said character set being a first [[kind]] type of character set, a second [[kind]] type of character set or a third [[kind]] type of character set;

a network interface, said network interface connecting to said character generator and capable of providing said character generating-server with access to functions to encode and send out information, and to receive and decode information; and

an external timer device, said external timer device connecting to said character-generating server and capable of providing both a current time and a periodic tick of approximately one second to said character-generating server.

2. (original) The apparatus in claim 1, wherein said random generator makes a pseudo random number required by said character generator to select a position on said orbit.
3. (currently amended) The apparatus in claim 1, wherein said first [[kind]] type of pool is a list of first [[kind]] type of mapping positions in said first [[kind]] type of key, said first [[kind]] type of mapping position is marked "used" each time said character-generating server makes a character from said first [[kind]] type of key.

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4. (currently amended) The apparatus in claim 1, wherein said second [[kind]] type of pool is a list of second [[kind]] type of mapping positions in said second [[kind]] type of key, said second [[kind]] type of mapping position is marked "used" each time said character-generating server makes a character from said second [[kind]] type of key.
5. (currently amended) The apparatus in claim 1, wherein said third [[kind]] type of pool comprises a double primary pool and a double rotating pool, said third [[kind]] type of key comprises a primary key and a rotating key, said double primary pool is a list of primary mapping positions in said primary key, said double rotating pool is a list of rotating mapping positions in said rotating key, said primary mapping position is marked "used" each time said character-generating server makes a character from said primary key, and said rotating mapping position is marked "used" each time said character-generating server makes a character from said rotating key.
6. (original) The apparatus in claim 1, wherein said character-generating server clears said pool each time said pool is full, or every one second, whichever comes first.
7. (currently amended) The apparatus in claim 1, wherein said character-generating server is capable of generating 1,065,151,889,408 said first [[kind]] type of character sets before it repeats a value if all said first [[kind]] type of character sets are requested in a constant stream, actual number of said first [[kind]] type of character set generated before repeating depends on said character-generating server restarts and idle time.

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8. (currently amended) The apparatus in claim 1, wherein said character-generating server is capable of generating 1,065,151,899,408 said first [[kind]] type of character sets every one second.
9. (currently amended) The apparatus in claim 1, wherein said character-generating server is capable of generating thirty-two said second [[kind]] type of character sets every one second.
10. (currently amended) The apparatus in claim 1, wherein said character-generating server is capable of generating 1024 said third [[kind]] type of character sets every one second.
11. (currently amended) The apparatus in claim 1, wherein said first [[kind]] type of character set is easier to guess than either said second [[kind]] type of character set or said third [[kind]] type of character set.
12. (currently amended) The apparatus in claim 1, wherein said second [[kind]] type of character set is guaranteed to not repeat for twenty-eight years from the activation of the character-generating server.
13. (currently amended) The apparatus in claim 1, wherein said third [[kind]] type of character set is an extension of a second [[kind]] type of character set in the sense that it

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will not repeat for twenty-eight years, said third [[kind]] type of character set is simpler to guess than said second [[kind]] type of character set.

14. (original) The apparatus in claim 1, wherein said character-generating server listens on a fixed port for requests from a client, said client can be a single client or a group of clients, and never produces any uninitiated transmissions to said client.

15. (currently amended) An apparatus for generating a group of character sets that are both never repeating within certain period of time and difficult to guess, said apparatus comprising:

a character-generating server, said character-generating server comprising a character generator, a random generator connecting to said character generator, a temporal reference storage connecting to said character generator, said temporal reference storage storing the most current time information, and a key-pool group connecting to said character generator, said key-pool group including any or all of a first [[kind]] type of key with a first [[kind]] type of pool, a second [[kind]] type of key with a second [[kind]] type of pool, and a third [[kind]] type of key with a third [[kind]] type of pool, said character generator capable of generating a character set, said character set having a pre-set number of different characters; based on a geometric progression of  $x(n)=p(x(n-1) + i)$ , said geometric progression manifesting itself as a chaotic progression of orbits around an origin, said orbit being defined as a unique and continuous path around said origin and never crossing in on itself or any other orbit, said  $x(n)$  and said

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$x(n-1)$  representing different character set, said  $n$  representing the number of said character set generated by said character-generating server, said  $i$  representing a temporal difference between the time when two sequential orbits crossing an arbitrary infinite vector from said origin, said  $p$  representing a period, said period being the temporal difference between character sets along any of said orbit, said geometric progression defining said pre-set number of periods on any of said orbit, said character set being a first [[kind]] type of character set, a second [[kind]] type of character set and a third [[kind]] type of character set;

a network interface, said network interface connecting to said character generator and capable of providing said character generating-server with access to functions to encode and send out information, and to receive or decode information; and

an external timer device, said external timer device connecting to said character-generating server and capable of providing both a current time and a periodic tick to said character-generating server, time interval between any of two consecutive said periodic ticks being adjustable.

16. (original) The apparatus in claim 15, wherein said random generator makes a pseudo random number required by said character generator to select a position on said orbit.

17. (currently amended) The apparatus in claim 15, wherein said first [[kind]] type of pool is a list of first [[kind]] type of mapping positions in said first [[kind]] type of key,

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said first [[kind]] type of mapping position is marked “used” each time said character-generating server makes a character from said first [[kind]] type of key.

18. (currently amended) The apparatus in claim 15, wherein said second [[kind]] type of pool is a list of second [[kind]] type of mapping positions in said second [[kind]] type of key, said second [[kind]] type of mapping position is marked “used” each time said character-generating server makes a character from said second [[kind]] type of key.

19. (currently amended) The apparatus in claim 15, wherein said third [[kind]] type of pool comprises a double primary pool and a double rotating pool, said third [[kind]] type of key comprises a primary key and a rotating key, said double primary pool is a list of primary mapping positions in said primary key, said double rotating pool is a list of rotating mapping positions in said rotating key, said primary mapping position is marked “used” each time said character-generating server makes a character from said primary key, and said rotating mapping position is marked “used” each time said character-generating server makes a character from said rotating key.

20. (original) The apparatus in claim 15, wherein said character-generating server clears said pool each time said pool is full, or every said tick, whichever comes first.

21. (currently amended) The apparatus in claim 15, wherein said character-generating server is capable of generating a significant large number of said first [[kind]] type of

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character sets before it repeats a value if all said first [[kind]] type of character sets are requested in a constant stream, actual number of said first [[kind]] type of character set generated before repeating depends on said character-generating server restarts and idle time.

22. (currently amended) The apparatus in claim 15, wherein said character-generating server is capable of generating a significant large number of said first [[kind]] type of character sets every tick.

23. (currently amended) The apparatus in claim 15, wherein said character-generating server is capable of generating said pre-set number of said second [[kind]] type of character sets every tick.

24. (currently amended) The apparatus in claim 15, wherein said character-generating server is capable of generating a large number of said third [[kind]] type of character sets every tick.

25. (currently amended) The apparatus in claim 15, wherein said first [[kind]] type of character set is easier to guess than either said second [[kind]] type of character set or said third [[kind]] type of character set.



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26. (currently amended) The apparatus in claim 15, wherein said second [[kind]] type of character set is guaranteed to not repeat for a certain period of time from the activation of the character-generating server.
27. (currently amended) The apparatus in claim 15, wherein said third [[kind]] type of character set is an extension of a second [[kind]] type of character set in the sense that it will not repeat for a certain period of time, said third [[kind]] type of character set is simpler to guess than said second [[kind]] type of character set.
28. (original) The apparatus in claim 15, wherein said character-generating server listens on a fixed port for requests from a client, said client can be a single client or a group of clients, and never produces any uninitiated transmissions to said client.
29. (original) An apparatus for generating a group of character sets that are both never repeating within certain period of time and difficult to guess, said apparatus comprising:  
     a character-generating server, said character-generating server comprising a character generator, a random generator connecting to said character generator, a temporal reference storage connecting to said character generator, said temporal reference storage storing the most current time information, and a key-pool group, said key-pool group having a key and a pool, connecting to said character generator, said character generator capable of generating a character set, said character set having a pre-set number of different characters, based on a geometric progression of  $x(n)=p(x(n-1) +$

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i), said geometric progression manifesting itself as a chaotic progression of orbits around an origin, said orbit being defined as a unique and continuous path around said origin and never crossing in on itself or any other orbit, said  $x(n)$  and said  $x(n-1)$  representing different character set, said  $n$  representing the number of said character set generated by said character-generating server, said  $i$  representing a temporal difference between the time when two sequential orbits crossing an arbitrary infinite vector from said origin, said  $p$  representing a period, said period is the temporal difference between character sets along any of said orbit, said geometric progression defining said pre-set number of periods on any of said orbit;

a network interface, said network interface connecting to said character generator and capable of providing said character generating-server with access to functions to encode and send out information, and to receive and decode information; and

an external timer device, said external timer device connecting to said character-generating server and capable of providing both a current time and a periodic tick to said character-generating server, time interval between any of two consecutive said periodic ticks being adjustable.

30. (currently amended) The apparatus in claim 29, wherein said character-generating server is capable of generating several different [[kind]] type of character set.

31. (original) The apparatus in claim 29, wherein said character-generating server has a plurality of key-pool groups.

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32. (original) The apparatus in claim 29, wherein said key-pool group has a key and a plurality of pools.
33. (original) The apparatus in claim 29, wherein said random generator makes a pseudo random number required by said character generator to select a position on said orbit.
34. (original) The apparatus in claim 29, wherein said pool is a list of mapping positions in said key, said mapping position is marked "used" each time said character-generating server makes a character from said key.
35. (original) The apparatus in claim 29, wherein said character-generating server clears said pool each time said pool is full, or every said tick, whichever comes first.
36. (original) The apparatus in claim 29, wherein said character-generating server is capable of generating at least said pre-set number of character sets every tick.
37. (original) The apparatus in claim 29, wherein said character-generating server listens on a fixed port for requests from a client, said client can be a single client or a group of clients, and never produces any uninitiated transmissions to said client.
38. (canceled)
39. (canceled)

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40. (canceled)
41. (canceled)
42. (canceled)
43. (canceled)
44. (canceled)
45. (canceled)
46. (canceled)
47. (canceled)
48. (canceled)
49. (canceled)
50. (canceled)
51. (canceled)
52. (canceled)
53. (currently amended) An apparatus for generating a group of character sets that are both never repeating within certain period of time and difficult to guess, said apparatus comprising:  
  
a character-generating server, said character-generating server existing either as a single task in an embedded environment, a single process daemon in a UNIX environment, a physical circuit or microchip, said character-generating server comprising a character generator, a random generator connecting to said character generator, a temporal reference storage connecting to said character generator, said temporal

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reference storage storing the most current time information, and a key-pool group connecting to said character generator, said key-pool group including any or all of a first [[kind]] type of key with a first [[kind]] type of pool, a second [[kind]] type of key with a second [[kind]] type of pool, and a third [[kind]] type of key with a third [[kind]] type of pool, said character generator capable of generating a character set, said character set having thirty-two different characters, based on a geometric progression of  $x(n)=p(x(n-1) + i)$ , said geometric progression manifesting itself as a chaotic progression of orbits around an origin, said orbit being defined as a unique and continuous path around said origin and never crossing in on itself or any other orbit, said  $x(n)$  and said  $x(n-1)$  representing different character set, said  $n$  representing the number of said character set generated by said character-generating server, said  $i$  representing a temporal difference between the time when two sequential orbits cross an arbitrary infinite vector from said origin, said  $p$  representing a period, said period being the temporal difference between character sets along any of said orbit, said geometric progression defining thirty-two periods on any of said orbit, said character set being a first [[kind]] type of character set, a second [[kind]] type of character set or a third [[kind]] type of character set;

a network interface, said network interface connecting to said character generator and capable of providing said character generating-server with access to functions to encode and send out information, and to receive and decode information;

an external timer device, said external timer device connecting to said character-generating server and capable of providing both a current time and a periodic tick of approximately one second to said character-generating server; and

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a remote application, said remote application connecting to said character-generating server through said network interface, said remote application having a character-generating utility program, said character-generating utility program defining function prototypes for configuring said remote application connection to said character-generating server, and an application program interface, said application program interface allowing said remote application to query said character-generating server for said first [[kind]] type of character set, said second [[kind]] type of character set and said third [[kind]] type of character.

54. (original) The apparatus in claim 53, wherein said random generator makes a pseudo random number required by said character generator to select a position on said orbit.

55. (currently amended) The apparatus in claim 53, wherein said first [[kind]] type of pool is a list of first [[kind]] type of mapping positions in said first [[kind]] type of key, said first [[kind]] type of mapping position is marked "used" each time said character-generating server makes a character from said first [[kind]] type of key.

56. (currently amended) The apparatus in claim 53, wherein said second [[kind]] type of pool is a list of second [[kind]] type of mapping positions in said second [[kind]] type of key, said second [[kind]] type of mapping position is marked "used" each time said character-generating server makes a character from said second [[kind]] type of key.

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57. (currently amended) The apparatus in claim 53, wherein said third [[kind]] type of pool comprises a double primary pool and a double rotating pool, said third [[kind]] type of key comprises a primary key and a rotating key, said double primary pool is a list of primary mapping positions in said primary key, said double rotating pool is a list of rotating mapping positions in said rotating key, said primary mapping position is marked "used" each time said character-generating server makes a character from said primary key, and said rotating mapping position is marked "used" each time said character-generating server makes a character from said rotating key.
58. (original) The apparatus in claim 53, wherein said character-generating server clears said pool each time said pool is full, or every one second, whichever comes first.
59. (currently amended) The apparatus in claim 53, wherein both said character-generating server and said remote application are capable of generating 1,065,151,889,408 said first [[kind]] type of character set before it repeats a value if all said groups of first [[kind]] type of character sets are requested in a constant stream, actual number of said first [[kind]] type of character set generated before repeating depends on said character-generating server restarts and idle time.
60. (currently amended) The apparatus in claim 53, wherein both said character-generating server and said remote application are capable of generating 1,065,151,899,408 said first [[kind]] type of character sets every one second.

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61. (currently amended) The apparatus in claim 53, wherein both said character-generating server and said remote application are capable of generating thirty-two said second [[kind]] type of character sets every one second.
62. (currently amended) The apparatus in claim 53, wherein both said character-generating server and said remote application are capable of generating 1024 said third [[kind]] type of character sets every one second.
63. (currently amended) The apparatus in claim 53, wherein said first [[kind]] type of character set is easier to guess than either said second [[kind]] type of character set or said third [[kind]] type of character set.
64. (currently amended) The apparatus in claim 53, wherein said second [[kind]] type of character set is guaranteed to not repeat for twenty-eight years from the activation of the character-generating server.
65. (currently amended) The apparatus in claim 53, wherein said third [[kind]] type of character set is an extension of a second [[kind]] type of character set in the sense that it will not repeat for twenty-eight years, said third [[kind]] type of character set is simpler to guess than said second [[kind]] type of character set.



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66. (original) The apparatus in claim 53, wherein said character-generating server listens on a fixed port for requests from said remote application, said remote application can be a single remote application or a group of remote applications, and never produces any uninitiated transmissions to said remote application.

67. (currently amended) An apparatus for generating a group of character sets that are both never repeating within certain period of time and difficult to guess, said apparatus comprising:

a character-generating server, said character-generating server comprising a character generator, a random generator connecting to said character generator, a temporal reference storage connecting to said character generator, said temporal reference storage storing the most current time information, and a key-pool group connecting to said character generator, said key-pool group including any or all of a first [[kind]] type of key with a first [[kind]] type of pool, a second [[kind]] type of key with a second [[kind]] type of pool, and a third [[kind]] type of key with a third [[kind]] type of pool, said character generator capable of generating a character set, said character set having a pre-set number of different characters, based on a geometric progression of  $x(n)=p(x(n-1) + i)$ , said geometric progression manifesting itself as a chaotic progression of orbits around an origin, said orbit being defined as a unique and continuous path around said origin and never crossing in on itself or any other orbit, said  $x(n)$  and said  $x(n-1)$  representing different character set, said  $n$  representing the number of said character set generated by said character-generating server, said  $i$  representing a temporal

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difference between the time when two sequential orbits crossing an arbitrary infinite vector from said origin, said  $p$  representing a period, said period being the temporal difference between character sets along any of said orbit, said geometric progression defining said pre-set number of periods on any of said orbit, said character set being a first  $[[\text{kind}]]$  type of character set, a second  $[[\text{kind}]]$  type of character set and a third  $[[\text{kind}]]$  type of character set;

a network interface, said network interface connecting to said character generator and capable of providing said character generating-server with access to functions to encode and send out information, and to receive and decode information;

an external timer device, said external timer device connecting to said character-generating server and capable of providing both a current time and a periodic tick to said character-generating server, time interval between any of two consecutive said periodic ticks being adjustable; and

a remote application, said remote application connecting to said character-generating server through said network interface, said remote application having a character-generating utility program, said character-generating utility program defining function prototypes for configuring said remote application connection to said character-generating server, and an application program interface, said application program interface allowing said remote application to query said character-generating server for said first  $[[\text{kind}]]$  type of character set, said second  $[[\text{kind}]]$  type of character set and said third  $[[\text{kind}]]$  type of character.

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68. (original) The apparatus in claim 67, wherein said random generator makes a pseudo random number required by said character generator to select a position on said orbit.

69. (currently amended) The apparatus in claim 67, wherein said first [[kind]] type of pool is a list of first [[kind]] type of mapping positions in said first [[kind]] type of key, said first [[kind]] type of mapping position is marked "used" each time said character-generating server makes a character from said first [[kind]] type of key.

70. (currently amended) The apparatus in claim 67, wherein said second [[kind]] type of pool is a list of second [[kind]] type of mapping positions in said second [[kind]] type of key, said second [[kind]] type of mapping position is marked "used" each time said character-generating server makes a character from said second [[kind]] type of key.

71. (currently amended) The apparatus in claim 67, wherein said third [[kind]] type of pool comprises a double primary pool and a double rotating pool, said third [[kind]] type of key comprises a primary key and a rotating key, said double primary pool is a list of primary mapping positions in said primary key, said double rotating pool is a list of rotating mapping positions in said rotating key, said primary mapping position is marked "used" each time said character-generating server makes a character from said primary key, and said rotating mapping position is marked "used" each time said character-generating server makes a character from said rotating key.

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72. (original) The apparatus in claim 67, wherein said character-generating server clears said pool each time said pool is full, or every said tick, whichever comes first.

73. (currently amended) The apparatus in claim 67, wherein said character-generating server is capable of generating a significant large number of said first [[kind]] type of character sets before it repeats a value if all said groups of first [[kind]] type of character sets are requested in a constant stream, actual number of said first [[kind]] type of character set generated before repeating depends on said character-generating server restarts and idle time.

74. (currently amended) The apparatus in claim 67, wherein both said character-generating server and said remote application are capable of generating a significant large number of said first [[kind]] type of character sets every tick.

75. (currently amended) The apparatus in claim 67, wherein both said character-generating server and said remote application are capable of generating said pre-set number of said second [[kind]] type of character sets every tick.

76. (currently amended) The apparatus in claim 67, wherein both said character-generating server and said remote application are capable of generating a large number of said third [[kind]] type of character sets every tick.

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77. (currently amended) The apparatus in claim 67, wherein said first [[kind]] type of character set is easier to guess than either said second [[kind]] type of character set or said third [[kind]] type of character set.

78. (currently amended) The apparatus in claim 67, wherein said second [[kind]] type of character set is guaranteed to not repeat for a certain period of time from the activation of the character-generating server.

79. (currently amended) The apparatus in claim 67, wherein said third [[kind]] type of character set is an extension of a second [[kind]] type of character set in the sense that it will not repeat for a certain period of time, said third [[kind]] type of character set is simpler to guess than said second [[kind]] type of character set.

80. (original) The apparatus in claim 67, wherein said character-generating server listens on a fixed port for requests from said remote application, said remote application can be a single remote application or a group of remote applications, and never produces any uninitiated transmissions to said client.

81. (original) An apparatus for generating a group of character sets that are both never repeating within certain period of time and difficult to guess, said apparatus comprising:  
a character-generating server, said character-generating server comprising a character generator, a random generator connecting to said character generator, a

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temporal reference storage connecting to said character generator, said temporal reference storage storing the most current time information, and a key-pool group, said key-pool group having a key and a pool, connecting to said character generator, said character generator capable of generating a character set, said character set having a pre-set number of different characters, based on a geometric progression of  $x(n) = p(x(n-1) + i)$ , said geometric progression manifesting itself as a chaotic progression of orbits around an origin, said orbit being defined as a unique and continuous path around said origin and never crossing in on itself or any other orbit, said  $x(n)$  and said  $x(n-1)$  representing different character set, said  $n$  representing the number of said character set generated by said character-generating server, said  $i$  representing a temporal difference between the time when two sequential orbits crossing an arbitrary infinite vector from said origin, said  $p$  representing a period, said period being the temporal difference between character sets along any of said orbit, said geometric progression defining said pre-set number of periods on any of said orbit;

a network interface, said network interface connecting to said character generator and capable of providing said character generating-server with access to functions to encode and send out information, and to receive and decode information;

an external timer device, said external timer device connecting to said character-generating server and capable of providing both a current time and a periodic tick to said character-generating server, time interval between any of two consecutive said periodic ticks being adjustable; and

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a remote application, said remote application connecting to said character-generating server through said network interface, said remote application having a character-generating utility program, said character-generating utility program defining function prototypes for configuring said remote application connection to said character-generating server, and an application program interface, said application program interface allowing said remote application to query said character-generating server for said character set.

82. (original) The apparatus in claim 81, wherein said character-generating server has a plurality of key-pool groups.

83. (original) The apparatus in claim 81, wherein said key-pool group having a key and a plurality of pools.

84. (original) The apparatus in claim 81, wherein said random generator makes a pseudo random number required by said character generator to select a position on said orbit.

85. (original) The apparatus in claim 81, wherein said pool is a list of mapping positions in said key, said mapping position is marked "used" each time said character-generating server makes a character from said key.

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86. (original) The apparatus in claim 81, wherein said character-generating server clears said pool each time said pool is full, or every said tick, whichever comes first.

87. (original) The apparatus in claim 81, wherein both said character-generating server and said remote application are capable of generating at least said pre-set number of groups of said character sets every tick.

88. (original) The apparatus in claim 81, wherein said character-generating server listens on a fixed port for requests from said remote application, said client can be a single remote application or a group of remote applications, and never produces any uninitiated transmissions to said client.

89. (currently amended) The apparatus in claim 81, wherein said character-generating server is capable of generating several different [[kind]] type of character set.

90. (canceled)

91. (canceled)

92. (canceled)

93. (canceled)

94. (canceled)

95. (canceled)

96. (canceled)



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97. (canceled)

98. (canceled)

99. (canceled)

100. (canceled)

101. (canceled)

102. (canceled)

103. (canceled)

104. (currently amended) A method for generating a group of character sets that are both never repeating within certain period of time and difficult to guess, said method comprising:

(a) generating a request for said character set by a client of a character-generating server, said character-generating server existing either as a single task in an embedded environment or as a single process daemon in a UNIX environment, said character-generating server comprising a character generator, a random generator connecting to said character generator, a temporal reference storage connecting to said character generator, said temporal reference storage storing the most current time information, and a key-pool group connecting to said character generator, said key-pool group including any or all of a first [[kind]] type of key with a first [[kind]] type of pool, a second [[kind]] type of key with a second [[kind]] type of pool, and a third [[kind]] type of key with a third [[kind]] type of pool;

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- (b) sending said request by said client to said character-generating server, said character-generating server having an external timer device capable of providing both a current time and a periodic tick of approximately one second to said character-generating server, said client connecting to said character-generating server through a network interface, said network interface connecting to said character generator and capable of providing said character generating-server with access to functions to encode and send out information, and to receive and decode information;
- (c) generating a pseudo random number required by said character generator;
- (d) sending said pseudo random number to said character generator;
- (e) generating a character for said character set, said character set having thirty-two different characters, by said character generator based on a geometric progression of  $x(n)=p(x(n-1) + i)$ , said geometric progression manifesting itself as a chaotic progression of orbits around an origin, said orbit being defined as a unique and continuous path around said origin and never crossing in on itself or any other orbit, said  $x(n)$  and said  $x(n-1)$  representing different character set, said  $n$  representing the number of said character set generated by said character-generating server, said  $i$  representing a temporal difference between the time when two sequential orbits crossing an arbitrary infinite vector from said origin, said  $p$  representing a period, said period being the temporal difference between character sets along any of said orbit, said geometric progression defining thirty-two periods on any of said orbit, said character set being a first [[kind]] type of character set, a second [[kind]] type of character set and a third [[kind]] type of character set; and

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(f) sending said character set by said character-generating server to said client.

105. (original) The method in claim 104 further comprises repeating (c) to (e) until all said characters of said character set have been generated.

106. (original) The method in claim 104, wherein said character generator selects a position on said orbit based on said random number generated by said random generator.

107. (currently amended) The method in claim 104, wherein said first [[kind]] type of pool is a list of first [[kind]] type of mapping positions in said first [[kind]] type of key, said first [[kind]] type of mapping position is marked "used" each time said character-generating server makes a character from said first [[kind]] type of key.

108. (currently amended) The method in claim 104, wherein said second [[kind]] type of pool is a list of second [[kind]] type of mapping positions in said second [[kind]] type of key, said second [[kind]] type of mapping position is marked "used" each time said character-generating server makes a character from said second [[kind]] type of key.

109. (currently amended) The method in claim 104, wherein said third [[kind]] type of pool comprises a double primary pool and a double rotating pool, said third [[kind]] type of key comprises a primary key and a rotating key, said double primary pool is a list of primary mapping positions in said primary key, said double rotating pool is a list of

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rotating mapping positions in said rotating key, said primary mapping position is marked "used" each time said character-generating server makes a character from said primary key, and said rotating mapping position is marked "used" each time said character-generating server makes a character from said rotating key.

110. (original) The method in claim 104, wherein said character-generating server clears said pool each time said pool is full, or every one second, whichever comes first.

111. (currently amended) The method in claim 104, wherein said character-generating server is capable of generating 1,065,151,889,408 said first [[kind]] type of character set before it repeats a value if all said first [[kind]] type of character sets are requested in a constant stream, actual number of said first [[kind]] type of character set generated before repeating depends on said character-generating server restarts and idle time.

112. (currently amended) The method in claim 104, wherein said character-generating server is capable of generating 1,065,151,899,408 said first [[kind]] type of character sets every one second.

113. (currently amended) The method in claim 104, wherein said character-generating server is capable of generating thirty-two said second [[kind]] type of character sets every one second.

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114. (currently amended) The method in claim 104, wherein said character-generating server is capable of generating 1024 said third [[kind]] type of character sets every one second.

115. (currently amended) The method in claim 104, wherein said first [[kind]] type of character set is easier to guess than either said second [[kind]] type of character set or said third [[kind]] type of character set.

116. (currently amended) The method in claim 104, wherein said second [[kind]] type of character set is guaranteed to not repeat for twenty-eight years from the activation of the character-generating server.

117. (currently amended) The method in claim 104, wherein said third [[kind]] type of character set is an extension of a second [[kind]] type of character set in the sense that it will not repeat for twenty-eight years, said third [[kind]] type of character set is simpler to guess than said second [[kind]] type of character set.

118. (original) The method in claim 104, wherein said character-generating server listens on a fixed port for requests from said client, said client can be a single client or a group of clients, and never produces any uninitiated transmissions to said client.

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119. (currently amended) A method for generating a group of character sets that are both never repeating within certain period of time and difficult to guess, said method comprising:

- (a) generating a request for said character set by a client of a character-generating server, said character-generating server comprising a character generator, a random generator connecting to said character generator, a temporal reference storage connecting to said character generator, said temporal reference storage storing the most current time information, and a key-pool group connecting to said character generator, said key-pool group including any or all of a first [[kind]] type of key with a first [[kind]] type of pool, a second [[kind]] type of key with a second [[kind]] type of pool, and a third [[kind]] type of key with a third [[kind]] type of pool;
- (b) sending said request by said client to said character-generating server, said character-generating server having an external timer device capable of providing both a current time and a periodic tick to said character-generating server, time interval between any of two consecutive said periodic ticks being adjustable, said client connecting to said character-generating server through a network interface, said network interface connecting to said character generator and capable of providing said character generating-server with access to functions to encode and send out information, and to receive and decode information;
- (c) generating a pseudo random number required by said character generator;
- (d) sending said pseudo random number to said character generator;

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- (e) generating a character for said character set, said character set having a pre-set number of characters, by said character generator based on a geometric progression of  $x(n) = p(x(n-1) + i)$ , said geometric progression manifesting itself as a chaotic progression of orbits around an origin, said orbit being defined as a unique and continuous path around said origin and never crossing in on itself or any other orbit, said  $x(n)$  and said  $x(n-1)$  representing different character set, said  $n$  representing the number of said character set generated by said character-generating server, said  $i$  representing a temporal difference between the time when two sequential orbits crossing an arbitrary infinite vector from said origin, said  $p$  representing a period, said period being the temporal difference between character sets along any of said orbit, said geometric progression defining a pre-set number of periods on any of said orbit, said character set being a first [[kind]] type of character set, a second [[kind]] type of character set and a third [[kind]] type of character set; and
- (f) sending said character set by said character-generating server to said client.

120. (original) The method in claim 119 further comprises repeating (c) to (e) until all said characters of said character set have been generated.

121. (original) The method in claim 119, wherein said character generator selects a position on said orbit based on said random number generated by said random generator.

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122. (currently amended) The method in claim 119, wherein said first [[kind]] type of pool is a list of first [[kind]] type of mapping positions in said first [[kind]] type of key, said first [[kind]] type of mapping position is marked "used" each time said character-generating server makes a character from said first [[kind]] type of key.

123. (currently amended) The method in claim 119, wherein said second [[kind]] type of pool is a list of second [[kind]] type of mapping positions in said second [[kind]] type of key, said second [[kind]] type of mapping position is marked "used" each time said character-generating server makes a character from said second [[kind]] type of key.

124. (currently amended) The method in claim 119, wherein said third [[kind]] type of pool comprises a double primary pool and a double rotating pool, said third [[kind]] type of key comprises a primary key and a rotating key, said double primary pool is a list of primary mapping positions in said primary key, said double rotating pool is a list of rotating mapping positions in said rotating key, said primary mapping position is marked "used" each time said character-generating server makes a character from said primary key, and said rotating mapping position is marked "used" each time said character-generating server makes a character from said rotating key.

125. (original) The method in claim 119, wherein said character-generating server clears said pool each time said pool is full, or every said tick, whichever comes first.



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126. (currently amended) The method in claim 119, wherein said character-generating server is capable of generating a significant large number of said first [[kind]] type of character sets before it repeats a value if all said first [[kind]] type of character sets are requested in a constant stream, actual number of said first [[kind]] type of character set generated before repeating depends on said character-generating server restarts and idle time.

127. (currently amended) The method in claim 119, wherein said character-generating server is capable of generating a significant large number of said first [[kind]] type of character sets every tick.

128. (currently amended) The method in claim 119, wherein said character-generating server is capable of generating said pre-set number of said second [[kind]] type of character sets every tick.

129. (currently amended) The method in claim 119, wherein said character-generating server is capable of generating a large number of said third [[kind]] type of character sets every tick.

130. (currently amended) The method in claim 119, wherein said first [[kind]] type of character set is easier to guess than either said second [[kind]] type of character set or said third [[kind]] type of character set.

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131. (currently amended) The method in claim 119, wherein said second [[kind]] type of character set is guaranteed to not repeat for a certain period of time from the activation of the character-generating server.

132. (currently amended) The method in claim 119, wherein said third [[kind]] type of character set is an extension of a second [[kind]] type of character set in the sense that it will not repeat for a certain period of time, said third [[kind]] type of character set is simpler to guess than said second [[kind]] type of character set.

133. (original) The method in claim 119, wherein said character-generating server listens on a fixed port for requests from said client, said client can be a single client or a group of clients, and never produces any uninitiated transmissions to said client.

134. (original) A method for generating a group of character sets that are both never repeating within certain period of time and difficult to guess, said method comprising:

(a) generating a request for said character set by a client of a character-generating server, said character-generating server comprising a character generator, a random generator connecting to said character generator, a temporal reference storage connecting to said character generator, said temporal reference storage storing the most current time information, and a key-pool group, said key-pool group having a key and a pool, connecting to said character generator;

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- (b) sending said request by said client to said character-generating server, said character-generating server having an external timer device capable of providing both a current time and a periodic tick to said character-generating server, time interval between any of two consecutive said periodic ticks being adjustable, said client connecting to said character-generating server through a network interface, said network interface connecting to said character generator and capable of providing said character generating-server with access to functions to encode and send out information, and to receive and decode information;
- (c) generating a pseudo random number required by said character generator;
- (d) sending said pseudo random number to said character generator;
- (e) generating a character for said character set, said character set having a pre-set number of characters, by said character generator based on a geometric progression of  $x(n)=p(x(n-1) + i)$ , said geometric progression manifesting itself as a chaotic progression of orbits around an origin, said orbit being defined as a unique and continuous path around said origin and never crossing in on itself or any other orbit, said  $x(n)$  and said  $x(n-1)$  representing different character set, said  $n$  representing the number of said character set generated by said character-generating server, said  $i$  representing a temporal difference between the time when two sequential orbits crossing an arbitrary infinite vector from said origin, said  $p$  representing a period, said period being the temporal difference between character sets along any of said orbit, said geometric progression defining said pre-set number of periods on any of said orbit; and
- (f) sending said character set by said character-generating server to said client.

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135. (currently amended) The method in claim [[135]] 134 further comprises repeating (c) to (e) until all said characters of said character set have been generated.

136. (currently amended) The method in claim [[135]] 134, wherein said character generator selects a position on said orbit based on said random number generated by said random generator.

137. (currently amended) The method in claim [[135]] 134, wherein said pool is a list of mapping positions in said key, said mapping position is marked "used" each time said character-generating server makes a character from said key.

138. (currently amended) The method in claim [[135]] 134, wherein said character-generating server is capable of generating several different [[kind]] type of character set.

139. (currently amended) The method in claim [[135]] 134, wherein said character-generating server has a plurality of key-pool groups.

140. (currently amended) The method in claim [[135]] 134, wherein said key-pool group has a key and a plurality of pools.

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141. (currently amended) The method in claim ~~[[135]]~~ 134, wherein said character-generating server clears said pool each time said pool is full, or every said tick, whichever comes first.

142. (currently amended) The method in claim ~~[[135]]~~ 134, wherein said character-generating server is capable of generating at least said pre-set number of said character sets every tick.

143. (currently amended) The method in claim ~~[[135]]~~ 134, wherein said character-generating server listens on a fixed port for requests from said client, said client can be a single client or a group of unrelated clients, and never produces any uninitiated transmissions to said client.

144. (canceled)

145. (canceled)

146. (canceled)

147. (canceled)

148. (canceled)

149. (canceled)

150. (canceled)

151. (canceled)

152. (canceled)

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153. (canceled)

154. (canceled)

155. (canceled)

156. (canceled)

157. (currently amended) A method for generating a group of character sets that are both never repeating within certain period of time and difficult to guess, said method comprising:

- (a) generating a request for said character set by a client of a character-generating server, said character-generating server existing either as a single task in an embedded environment or as a single process daemon in a UNIX environment, said character-generating server comprising a character generator, a random generator connecting to said character generator, a temporal reference storage connecting to said character generator, said temporal reference storage storing the most current time information, and a key-pool group connecting to said character generator, said key-pool group including any or all of a first [[kind]] type of key with a first [[kind]] type of pool, a second [[kind]] type of key with a second [[kind]] type of pool, and a third [[kind]] type of key with a third [[kind]] type of pool;
- (b) sending said request by said client to said character-generating server, said character-generating server having an external timer device capable of providing both a current time and a periodic tick of approximately one second to said character-generating

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server, said client connecting to said character-generating server through a network interface, said network interface connecting to said character generator and capable of providing said character generating-server with access to functions to encode and send out information, and to receive and decode information;

- (c) generating a pseudo random number required by said character generator;
- (d) sending said pseudo random number to said character generator;
- (e) generating a character for said character set, said character set having thirty-two different characters, by said character generator based on a geometric progression of  $x(n) = p(x(n-1) + i)$ , said geometric progression manifesting itself as a chaotic progression of orbits around an origin, said orbit being defined as a unique and continuous path around said origin and never crossing in on itself or any other orbit, said  $x(n)$  and said  $x(n-1)$  representing different character set, said  $n$  representing the number of said character set generated by said character-generating server, said  $i$  representing a temporal difference between the time when two sequential orbits crossing an arbitrary infinite vector from said origin, said  $p$  representing a period, said period being the temporal difference between character sets along any of said orbit, said geometric progression defining thirty-two periods on any of said orbit, said character set being a first [[kind]] type of character set, a second [[kind]] type of character set and a third [[kind]] type of character set; and
- (f) sending said character set along with a related key by said character-generating server to said client;

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- (g) sending said character set along with said related key to a target server, said target server connecting to said character-generating server through said network interface, said target server having a character-generating utility program, said character-generating utility program defines function prototypes for configuring said target server connection to said character-generating server, and an application program interface, said application program interface allows said target server to query said character-generating server for said first [[kind]] type of character set, said second [[kind]] type of character set or said third [[kind]] type of character set;
- (h) sending said related key to said character-generating server by said target server;
- (i) re-creating said character set from said related key by said target server; and
- (j) sending said character set along with said related key to said target server.

158. (currently amended) The method in claim [[158]] 157 further comprises repeating (c) to (e) until all said characters of said character set have been generated.

159. (currently amended) The method in claim [[158]] 157, wherein said character generator selects a position on said orbit based on said random number generated by said random generator.

160. (currently amended) The method in claim [[158]] 157, wherein said first [[kind]] type of pool is a list of first [[kind]] type of mapping positions in said first [[kind]] type



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of key, said first [[kind]] type of mapping position is marked "used" each time said character-generating server makes a character from said first [[kind]] type of key.

161. (currently amended) The method in claim [[158]] 157, wherein said second [[kind]] type of pool is a list of second [[kind]] type of mapping positions in said second [[kind]] type of key, said second [[kind]] type of mapping position is marked "used" each time said character-generating server makes a character from said second [[kind]] type of key.

162. (currently amended) The method in claim [[158]] 157, wherein said third [[kind]] type of pool comprises a double primary pool and a double rotating pool, said third [[kind]] type of key comprises a primary key and a rotating key, said double primary pool is a list of primary mapping positions in said primary key, said double rotating pool is a list of rotating mapping positions in said rotating key, said primary mapping position is marked "used" each time said character-generating server makes a character from said primary key, and said rotating mapping position is marked "used" each time said character-generating server makes a character from said rotating key.

163. (currently amended) The method in claim [[158]] 157, wherein said character-generating server clears said pool each time said pool is full, or every one second, whichever comes first.

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164. (currently amended) The method in claim 157, wherein both said character-generating server and said target server are capable of generating 1,065,151,889,408 said first type of character set before it repeats a value if all said first type of character sets are requested in a constant stream, actual number of said first type of character set generated before repeating depends on said character-generating server restarts and idle time.
165. (currently amended) The method in claim 157, wherein both said character-generating server and said target server are capable of generating 1,065,151,899,408 said first type of character sets every one second.
166. (currently amended) The method in claim 157, wherein both said character-generating server and said target server are capable of generating thirty-two said second type of character sets every one second.
167. (currently amended) The method in claim 157, wherein both said character-generating server and said target server is capable of generating 1024 said third type of character sets every one second.
168. (currently amended) The method in claim 157, wherein said first type of character set is easier to guess than either said second type of character set or said third type of character set.

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169. (currently amended) The method in claim [[158]] 157, wherein said second [[kind]] type of character set is guaranteed to not repeat for twenty-eight years from the activation of the character-generating server.
170. (currently amended) The method in claim [[158]] 157, wherein said third [[kind]] type of character set is an extension of a second [[kind]] type of character set in the sense that it will not repeat for twenty-eight years, said third [[kind]] type of character set is simpler to guess than said second [[kind]] type of character set.
171. (currently amended) The method in claim [[158]] 157, wherein said character-generating server listens on a fixed port for requests from said client, said client can be a single client or a group of clients, and never produces any uninitiated transmissions to said client.
172. (currently amended) A method for generating a group of character sets that are both never repeating within certain period of time and difficult to guess, said method comprising:
- (a) generating a request for said character set by a client of a character-generating server, said character-generating server comprising a character generator, a random generator connecting to said character generator, a temporal reference storage connecting to said character generator, said temporal reference storage stores the most current time information, and a key-pool group connecting to said character generator, said key-pool

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- group includes any or all of a first [[kind]] type of key with a first [[kind]] type of pool, a second [[kind]] type of key with a second [[kind]] type of pool, and a third [[kind]] type of key with a third [[kind]] type of pool;
- (b) sending said request by said client to said character-generating server, said character-generating server having an external timer device capable of providing both a current time and a periodic tick to said character-generating server, time interval between any of two consecutive said periodic ticks being adjustable, said client connecting to said character-generating server through a network interface, said network interface connecting to said character generator and capable of providing said character generating-server with access to functions to encode and send out information, and to receive and decode information;
- (c) generating a pseudo random number required by said character generator;
- (d) sending said pseudo random number to said character generator;
- (e) generating a character for said character set, said character set having a pre-set number of characters, by said character generator based on a geometric progression of  $x(n)=p(x(n-1) + i)$ , said geometric progression manifests itself as a chaotic progression of orbits around an origin, said orbit is defined as a unique and continuous path around said origin that never crosses in on itself or any other orbit, said  $x(n)$  and said  $x(n-1)$  represent different character set, said  $n$  represents the number of said character set generated by said character-generating server, said  $i$  represents a temporal difference between the time when two sequential orbits cross an arbitrary infinite vector from said origin, said  $p$  represents a period, said period is the temporal difference between character sets along

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- any of said orbit, said geometric progression defines a pre-set number of periods on any of said orbit, said character set can be a first [[kind]] type of character set, a second [[kind]] type of character set and a third [[kind]] type of character set; an
- (f) sending said character set along with a related key by said character-generating server to said client;
  - (g) sending said character set along with said related key to a target server, said target server connecting to said character-generating server through said network interface, said target server having a character-generating utility program, said character-generating utility program defining function prototypes for configuring said target server connection to said character-generating server, and an application program interface, said application program interface allowing said target server to query said character-generating server for said first [[kind]] type of character set, said second [[kind]] type of character set or said third [[kind]] type of character set;
  - (h) sending said related key to said character-generating server by said target server;
  - (i) re-creating said character set from said related key by said target server; and
  - (j) sending said character set along with said related key to said target server.

173. (currently amended) The method in claim [[173]] 172 further comprises repeating (c) to (e) until all said characters of said character set have been generated.

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174. (currently amended) The method in claim [[173]] 172, wherein said character generator selects a position on said orbit based on said random number generated by said random generator.

175. (currently amended) The method in claim [[173]] 172, wherein said first [[kind]] type of pool is a list of first [[kind]] type of mapping positions in said first [[kind]] type of key, said first [[kind]] type of mapping position is marked "used" each time said character-generating server makes a character from said first [[kind]] type of key.

176. (currently amended) The method in claim [[173]] 172, wherein said second [[kind]] type of pool is a list of second [[kind]] type of mapping positions in said second [[kind]] type of key, said second [[kind]] type of mapping position is marked "used" each time said character-generating server makes a character from said second [[kind]] type of key.

177. (currently amended) The method in claim [[173]] 172, wherein said third [[kind]] type of pool comprises a double primary pool and a double rotating pool, said third [[kind]] type of key comprises a primary key and a rotating key, said double primary pool is a list of primary mapping positions in said primary key, said double rotating pool is a list of rotating mapping positions in said rotating key, said primary mapping position is marked "used" each time said character-generating server makes a character from said primary key, and said rotating mapping position is marked "used" each time said character-generating server makes a character from said rotating key.

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178. (currently amended) The method in claim [[173]] 172, wherein said character-generating server clears said pool each time said pool is full, or every said tick, whichever comes first.

179. (currently amended) The method in claim [[173]] 172, wherein both said character-generating server and said target server are capable of generating a significant large number of said first [[kind]] type of character sets before it repeats a value if all said first [[kind]] type of character sets are requested in a constant stream, actual number of said first [[kind]] type of character set generated before repeating depends on said character-generating server restarts and idle time.

180. (currently amended) The method in claim [[173]] 172, wherein both said character-generating server and said target server are capable of generating a significant large number of said first [[kind]] type of character sets every tick.

181. (currently amended) The method in claim [[173]] 172, wherein both said character-generating server and said target server are capable of generating said pre-set number of said second [[kind]] type of character sets every tick.

182. (currently amended) The method in claim [[173]] 172, wherein both said character-generating server and said target server are capable of generating a large number of said third [[kind]] type of character sets every tick.

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183. (currently amended) The method in claim [[173]] 172, wherein said first [[kind]] type of character set is easier to guess than either said second [[kind]] type of character set or said third [[kind]] type of character set.
184. (currently amended) The method in claim [[173]] 172, wherein said second [[kind]] type of character set is guaranteed to not repeat for a certain period of time from the activation of the character-generating server.
185. (currently amended) The method in claim [[173]] 172, wherein said third [[kind]] type of character set is an extension of a second [[kind]] type of character set in the sense that it will not repeat for a certain period of time, said third [[kind]] type of character set is simpler to guess than said second [[kind]] type of character set.
186. (currently amended) The method in claim [[173]] 172, wherein said character-generating server listens on a fixed port for requests from said client, said client can be a single client or a group of unrelated clients, and never produces any uninitiated transmissions to said client.
187. (original) A method for generating a group of character sets that are both never repeating within certain period of time and difficult to guess, said method comprising:
- (a) generating a request for said character set by a client of a character-generating server, said character-generating server comprising a character generator, a random



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- generator connecting to said character generator, a temporal reference storage connecting to said character generator, said temporal reference storage storing the most current time information, and a key-pool group, said key-pool group having a key and a pool, connecting to said character generator;
- (b) sending said request by said client to said character-generating server, said character-generating server having an external timer device capable of providing both a current time and a periodic tick to said character-generating server, time interval between any of two consecutive said periodic ticks being adjustable, said client connecting to said character-generating server through a network interface, said network interface connecting to said character generator and capable of providing said character generating-server with access to functions to encode and send out information, and to receive and decode information;
- (c) generating a pseudo random number required by said character generator;
- (d) sending said pseudo random number to said character generator;
- (e) generating a character for said character set, said character set having a pre-set number of characters, by said character generator based on a geometric progression of  $x(n)=p(x(n-1) + i)$ , said geometric progression manifesting itself as a chaotic progression of orbits around an origin, said orbit being defined as a unique and continuous path around said origin and never crossing in on itself or any other orbit, said  $x(n)$  and said  $x(n-1)$  representing different character set, said  $n$  representing the number of said character set generated by said character-generating server, said  $i$  representing a temporal difference between the time when two sequential orbits crossing an arbitrary infinite

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vector from said origin, said p representing a period, said period being the temporal difference between character sets along any of said orbit, said geometric progression defining said pre-set number of periods on any of said orbit;

- (f) sending said character set along with a related key by said character-generating server to said client;
- (g) sending said character set along with said related key to a target server, said target server connecting to said character-generating server through said network interface, said target server having a character-generating utility program, said character-generating utility program defining function prototypes for configuring said target server connection to said character-generating server, and an application program interface, said application program interface allowing said target server to query said character-generating server for said character set;
- (h) sending said related key to said character-generating server by said target server;
- (i) re-creating said character set from said related key by said target server; and
- (j) sending said character set along with said related key to said target server.

188. (currently amended) The method in claim [[188]] 187 further comprises repeating (c) to (e) until all said characters of said character set have been generated.

189. (currently amended) The method in claim [[188]] 187, wherein said character generator selects a position on said orbit based on said random number generated by said random generator.

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190. (currently amended) The method in claim ~~[[188]]~~ 187, wherein said pool is a list of mapping positions in said key, said mapping position is marked "used" each time said character-generating server makes a character from said key.
191. (currently amended) The method in claim ~~[[188]]~~ 187, wherein both said character-generating server and said target server are capable of generating several different ~~[[kind]]~~ type of character set.
192. (currently amended) The method in claim ~~[[188]]~~ 187, wherein said character-generating server has a plurality of key-pool groups.
193. (currently amended) The method in claim ~~[[188]]~~ 187, wherein said key-pool group has a key and a plurality of pools.
194. (currently amended) The method in claim ~~[[188]]~~ 187, wherein said character-generating server clears said pool each time said pool is full, or every said tick, whichever comes first.
195. (currently amended) The method in claim ~~[[188]]~~ 187, wherein said character-generating server is capable of generating at least said pre-set number of said character sets every tick.

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196. (currently amended) The method in claim ~~[[188]]~~ 187, wherein said character-generating server listens on a fixed port for requests from said client, said client can be a single client or a group of unrelated clients, and never produces any uninitiated transmissions to said client.

- 197. (canceled)
- 198. (canceled)
- 199. (canceled)
- 200. (canceled)
- 201. (canceled)
- 202. (canceled)
- 203. (canceled)
- 204. (canceled)
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- 207. (canceled)
- 208. (canceled)
- 209. (canceled)
- 210. (canceled)

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211. (new) An apparatus for generating a group of character sets that are both never repeating within certain period of time and difficult to guess, said apparatus comprising:

a character-generating server, said character-generating server comprising a character generator, a random generator connecting to said character generator, a temporal reference storage connecting to said character generator, and a key-pool group, said key-pool group having a key and a pool, connecting to said character generator, said character-generating server being capable of generating a character set, said character set having a pre-set number of different characters, the character set being defined by a geometric progression of  $x(n)=p(x(n-1) + i)$ , said geometric progression manifesting itself as a chaotic progression of orbits around an origin, said orbit being defined as a unique, continuous path around said origin and never crossing in on itself or any other orbit, said  $x(n)$  and said  $x(n-1)$  representing different character sets, said  $n$  representing the number of said character set generated by said character-generating server, said  $i$  representing a temporal difference between the time when two sequential orbits crossing an arbitrary infinite vector from said origin, said  $p$  representing a period, said period being the temporal difference between character sets along an orbit, said geometric progression defining said pre-set number of periods per orbit;

a network interface, said network interface connecting to said character generator; and

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an external timer device, said external timer device connecting to said character-generating server.

212. (new) An apparatus for generating a group of character sets that are both never repeating within certain period of time and difficult to guess, said apparatus comprising:

a character-generating server, said character-generating server comprising a character generator, a random generator connecting to said character generator, a temporal reference storage connecting to said character generator, and a key-pool group, said key-pool group having a key and a pool, connecting to said character generator, said character-generating server capable of generating a character sets, said character set having a pre-set number of different characters, said character set being defined by a geometric progression of  $x(n) = p(x(n-1) + i)$ , said geometric progression manifesting itself as a chaotic progression of orbits around an origin, said orbit being defined as a unique, continuous path around said origin and never crossing in on itself or any other orbit, said  $x(n)$  and said  $x(n-1)$  representing different character sets, said  $n$  representing the number of said character set generated by said character-generating server, said  $i$  representing a temporal difference between the time when two sequential orbits crossing an arbitrary infinite vector from said origin, said  $p$  representing a period, said period being the temporal difference between

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character sets along an orbit, said geometric progression defining said pre-set number of periods per orbit;

a network interface, said network interface connecting to said character generator;

an external timer device, said external timer device connecting to said character-generating server; and

a remote application, said remote application connecting to said character-generating server through said network interface, said remote application having a character-generating utility program, said character-generating utility program defining function prototypes for configuring said remote application connection to said character-generating server, and an application program interface, said application program interface allows said remote application to query said character-generating server for said character set.

213. (new) A method for generating a group of character sets that are both never repeating within certain period of time and difficult to guess, said method comprising.

(a) generating a request for said character set by a client of a character-generating server, said character-generating server comprising a character generator, a random generator connecting to said character generator, a temporal reference storage connecting to said character generator, and a key-pool group, said temporal reference storage storing the most current time

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information, said key-pool group having a key and a pool, connecting to said character generator, said character-generating server being capable of generating a character set, said character set having a pre-set number of different characters;

(b) sending said request by said client to said character-generating server, said character-generating server having an external timer device, said external timer device connecting to said character-generating server, said client connecting to said character-generating server through a network interface, said network interface connecting to said character generator;

(c) generating a pseudo random number required by said character generator;

(d) sending said pseudo random number to said character generator;

(e) generating a character for said character set by said character generator; and

(f) sending said character set by said character-generating server to said client.

214. (new) A method for generating a group of character sets that are both never repeating within certain period of time and difficult to guess, said method comprising.

(a) generating a request for said character set by a client of a character-generating server, said character-generating server comprising a character



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generator, a random generator connecting to said character generator, a temporal reference storage connecting to said character generator, and a key-pool group, said temporal reference storage storing the most current time information, said key-pool group having a key and a pool, connecting to said character generator, said character-generating server capable of generating a character set, said character set having a pre-set number of different characters;

(b) sending said request by said client to said character-generating server, said character-generating server having an external timer device, said external timer device connecting to said character-generating server, said client connecting to said character-generating server through a network interface, said network interface connecting to said character generator;

(c) generating a pseudo random number required by said character generator;

(d) sending said pseudo random number to said character generator;

(e) generating a character for said character set by said character generator;

(f) sending said character set along with a related key by said character-generating server to said client;

(g) sending said character set along with said related key to a target server, said target server connecting to said character-generating server through said network interface, said target server having a character-generating utility program, said character-generating utility program defining function prototypes

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for configuring said target server connection to said character-generating server,  
and an application program interface, said application program interface  
allowing said target server to query said character-generating server for said  
character set;

(h) sending said related key to said character-generating server by said  
target server;

(i) re-creating said character set from said related key by said target  
server; and

(j) sending said character set along with said related key to said target  
server.